



GOES R

GOES-T/18 Transition to Operations

GOES-R Steering Group

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NOAA ~ NASA





GOES-West Transition Plan - Swap of GOES-17/18

- Transition plan swaps GOES-17 with GOES-18 as the operational GOES-West satellite
 - Assumes successful launch and checkout of GOES-T/18
- Incorporates early drift of GOES-18 to the West operational longitude
 - Allows for early operational use of GOES-18 ABI after Beta maturity is achieved
 - Transition plan incorporates RF conflict mitigation between GOES-17/18 X-band and T&C uplinks/downlinks
 - Users do not need to re-point antennas
- GOES-18 will be drifted to 136.8W to complete instrument PLT activities
 - 0.4 deg offset from GOES-17 allows X-band RDL downlink from both G17/G18
 - 0.2 deg offset from 137.0W meets ground product generation requirements
 - Both GOES-17 and GOES-18 images will be re-mapped to 137.0W
- GOES-18 ABI data available to support August GOES-17 ABI warm period
 - GOES-18 ABI data available via Cloud interface and interleaving with GOES-17 non-ABI product data
- After operational transition, GOES-18 is nudged over to 137.2W
- GOES-17 drifted to 105W and placed in on-orbit storage



GOES-West Transition Plan - Swap of GOES-17/18

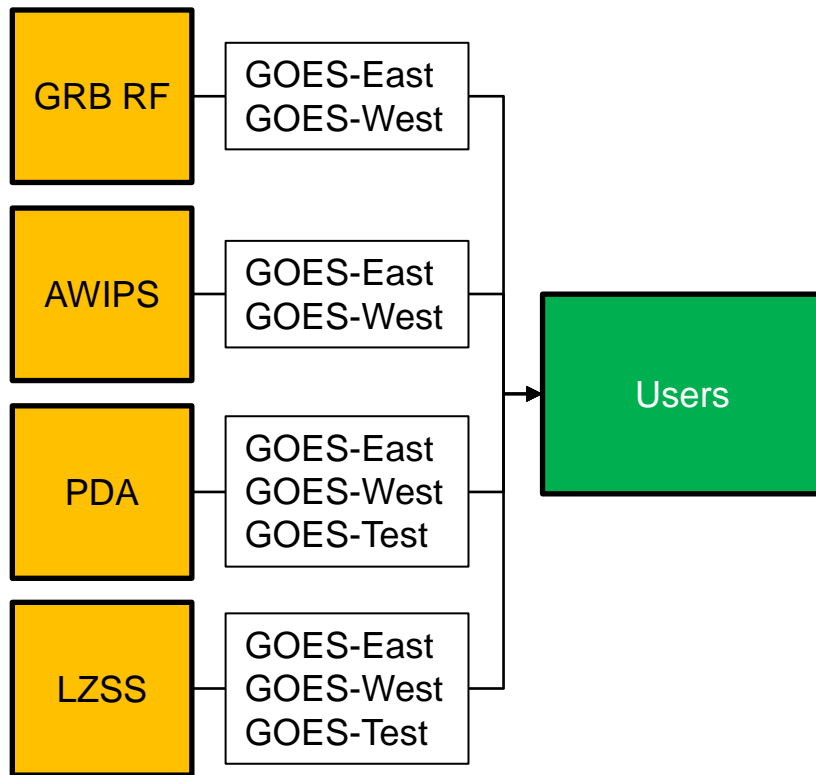
Date (Based on 2/16/22 Launch)	GOES-17		GOES-T/18	
	Location	Activity	Location	Activity
2/16 – 3/10	137.2°W	GOES-West Operations		Launch and Orbit Raising
3/14 – 5/2			89.5°W	GOES-18 PLT Part 1 <ul style="list-style-type: none">Instrument Outgassing, Spacecraft PLTFirst ABI Image (Vis & IR) @ 89.5W
5/2 – 5/23			<i>Drift to 136.8W</i>	GOES-18 Drift from 89.5W to 136.8W <ul style="list-style-type: none">PLT activities paused; No GOES-18 product data
5/23			136.8°W	GOES-18 PLT Part 2 begins
7/8			136.8°W	GOES-18 ABI reaches Beta maturity <ul style="list-style-type: none">GOES-18 ABI 'supplemental' data via Cloud
8/1-9/6	137.2°W	GOES-17 ABI Warm Period <ul style="list-style-type: none">G-18 ABI interleaved in G-17 data	136.8°W	GOES-18 ABI data interleaved in GOES-17 data
9/6-11/16	137.2°W	GOES-West Operations <ul style="list-style-type: none">GOES-17 Nominal Distribution	136.8°W	GOES-18 product maturation continues <ul style="list-style-type: none">GOES-18 ABI 'supplemental' data via Cloud
9/16	137.2°W	GOES-West Operations <ul style="list-style-type: none">GOES-17 Nominal Distribution	136.8°W	GOES-18 PLT Part 2 Complete (9/16) <ul style="list-style-type: none">NASA Post Launch Assessment Review (9/14)Handover Readiness Review (9/21)GOES-18 Handover to OSPO (9/21)
Est. 12/12	137.2°W	Full GOES-18 GRB relayed through GOES-17 <ul style="list-style-type: none">Users do not need to re-point antennasX-band downlink off and instruments shut down	136.8°W	GOES-18 Declared operational GOES-West <ul style="list-style-type: none">Ops Transition Readiness Review held 1 week priorBegin full GOES-18 GRB broadcast (relay through GOES-17)
12/13 – 12/20		Full GOES-18 GRB relayed through GOES-17 during longitude shift	Slow drift to 137.2°W	GOES-18 gradual shift to 137.2
12/21	Drift to 105°W	End GOES-18 data relay through GOES-17 RF GOES-17 drift to 105°W followed by storage mode	137.2°W	GOES-18 Nominal Distribution <ul style="list-style-type: none">End GOES-18 GRB relay through GOES-17Begin GOES-18 GRB broadcast / nominal distributionSAR/DCS services transitioned to GOES-18



Product Data Interleaving Background

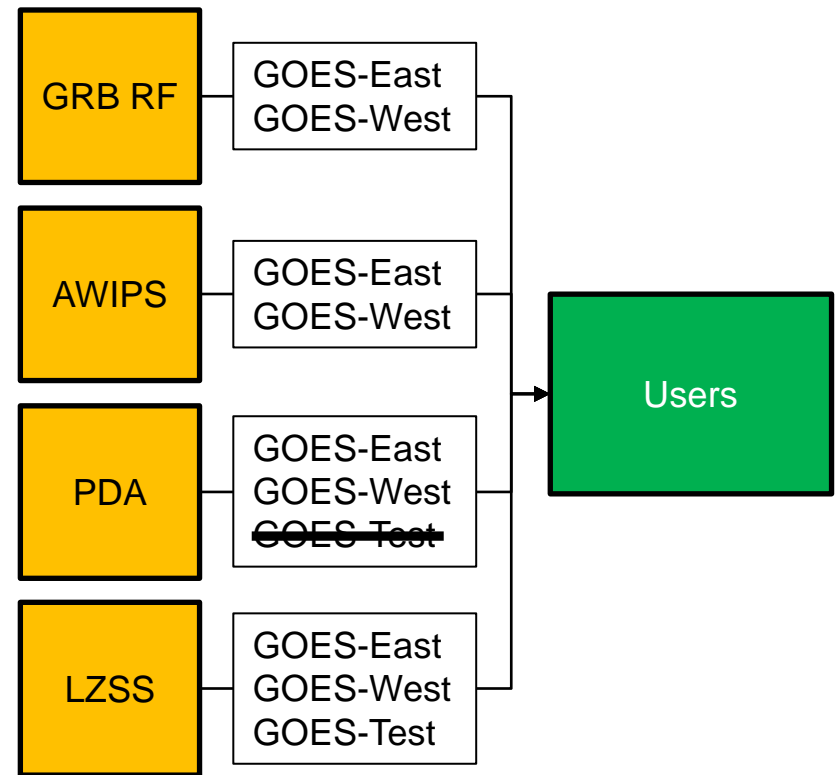
- NWS requested that the GOES-R Program distribute beta GOES-T ABI products during August 2022 warm season
- Interleaving is a method that allows the GOES-R GS to merge data from multiple satellites into a single data processing flow
 - Data to AWIPS and GRB uplink can be configured to contain a mixture of data from GOES-17 Non-ABI and/or GOES-T/18 ABI
 - Will present to the end user as a single GOES-West stream
- When interleaving all product metadata will be maintained so the original source spacecraft designator will remain intact
 - Users will always be able to determine which satellite was used to generate the data being reviewed

Nominal PLT (at WCDAS)



Stream	ABI Source	Other Inst Source
GOES-East	GOES-16	GOES-16
GOES-West	GOES-17	GOES-17
GOES-Test	GOES-18	GOES-18

Failover PLT (at CBU)

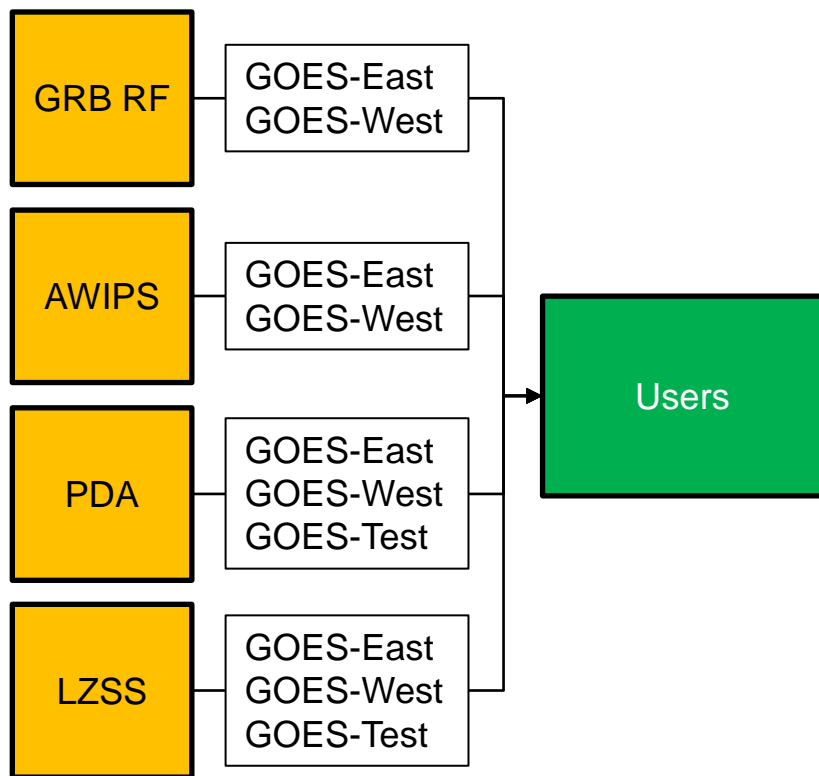




Stream	ABI Source	Other Inst Source
GOES-East	GOES-16	GOES-16
GOES-West	GOES-17	GOES-17
GOES-Test	GOES-18	L0 only GOES-18 L0 only

- CBU has only two DO strings, so GOES-18 L1b data will not be generated.

Nominal PLT (at WCDAS)

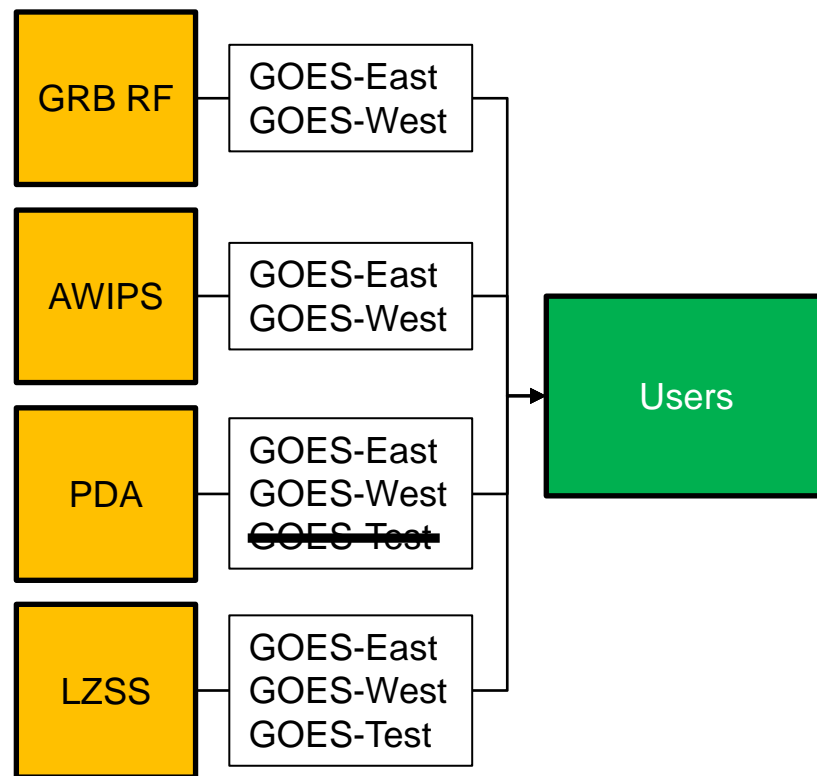
Nominal Interleave (at WCDAS)





Stream	ABI Source	Other Inst Source
GOES-East	GOES-16	GOES-16
GOES-West	GOES-17  -18	GOES-17
GOES-Test	GOES-18  -17	GOES-18

Failover PLT (at CBU)

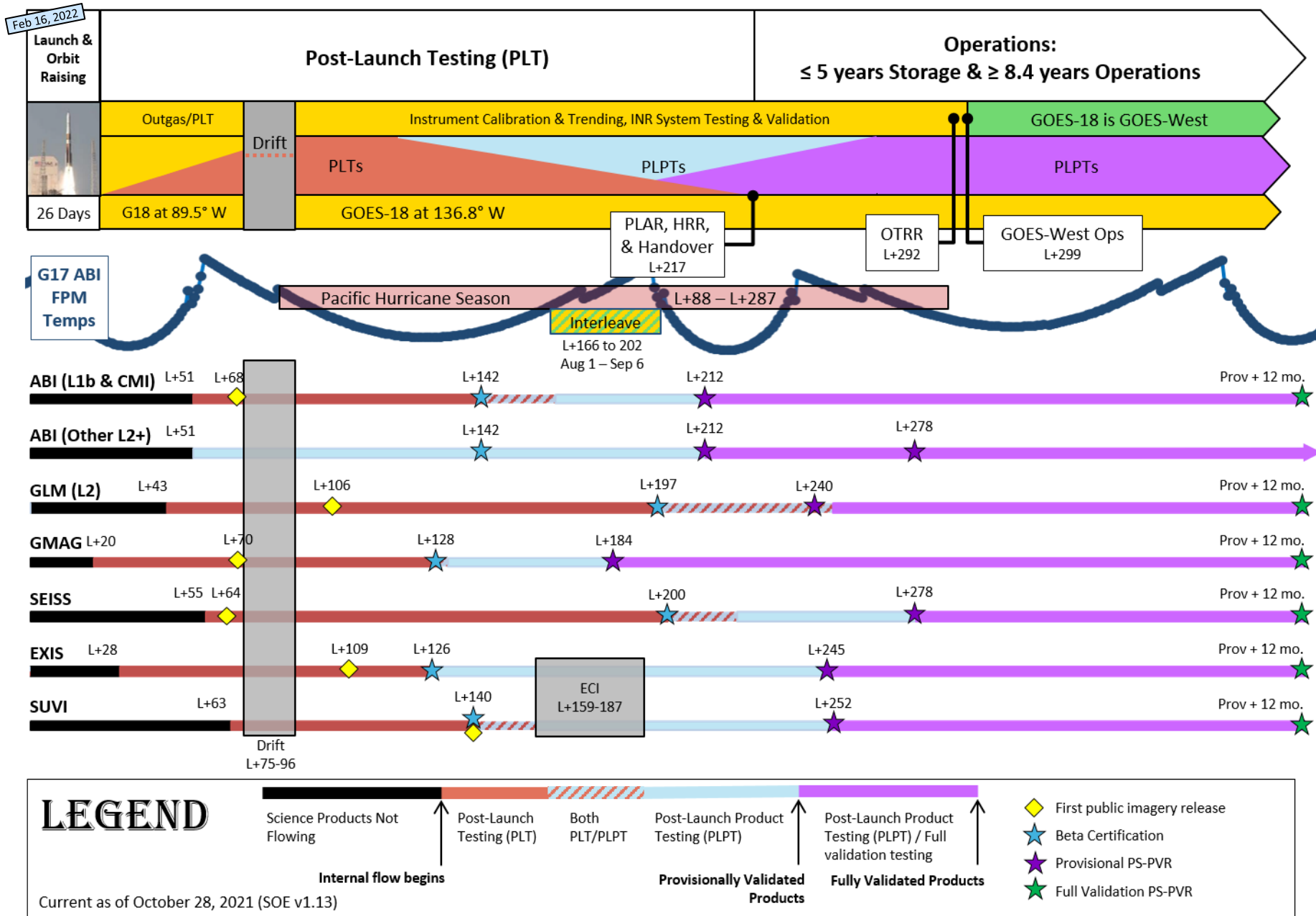
Failover Interleave (at CBU)



Stream	ABI Source	Other Inst Source
GOES-East	GOES-16	GOES-16
GOES-West	GOES-17  -18	GOES-17
GOES-Test	GOES-18  -17 L0 only	GOES-18 L0 only

- CBU has only two DO strings, so GOES-18 L1b data will not be generated.
- CBU has only two DO strings, so GOES-18 Non-ABI and GOES-17 ABI L1b/L2+ data will not be generated. L0 will still be generated.

GOES-T Post-Launch Science Product Validation Schedule



October 29, 2021

Note: All dates are coordinated with Flight/MOST PLT SOE group and are subject to change.



GOES-T L1b Science Product Validation Status

ABI L1b Product	Beta	Provisional	Full
Radiances	7/8/2022	9/16/2022	FY23
GLM L2 Product			
Lightning: Events, Groups, Flashes	9/1/2022	10/14/2022	FY23
SEISS L1b Products			
Energetic Heavy Ions	9/4/2022	11/21/2022	FY23
Magnetospheric e ⁻ /p ⁺ : Low Energy	9/4/2022	11/21/2022	FY23
Magnetospheric e ⁻ /p ⁺ : High Energy	9/4/2022	11/21/2022	FY23
Solar & Galactic Protons	9/4/2022	11/21/2022	FY23
EXIS L1b Products			
Solar Flux: EUV	6/22/2022	10/19/2022*	FY23
Solar Flux: X-ray Irradiance	6/22/2022	10/19/2022*	FY23
SUVI L1b Product			
Solar EUV Imagery	7/6/2022	10/26/2022*	FY23
GMAG L1b Product			
Geomagnetic Field	6/24/2022	8/19/2022	FY23

*EXIS and SUVI Provisional dates may be affected by final scheduling of ECI test

Validation Maturity Levels:

Not Validated	Beta Maturity	Provisional Maturity	Full Maturity
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GOES-T L2+ Science Product Validation Status

L2+ Products	Beta	Prov	Full
Cloud and Moisture Imagery (CMI) and Sectorized CMI (KPP)	7/8/2022	9/16/2022	FY23
Aerosol Detection (Smoke & Dust)	7/8/2022	11/16/2022	
Aerosol Optical Depth	7/8/2022	11/16/2022	
Clear Sky Mask	7/8/2022	9/16/2022	
Cloud Cover Layers	7/8/2022	11/16/2022	
Cloud Optical Depth	7/8/2022	11/16/2022	
Cloud Particle Size Distribution	7/8/2022	11/16/2022	
Cloud Top Height	7/8/2022	9/16/2022	
Cloud Top Phase	7/8/2022	9/16/2022	
Cloud Top Pressure	7/8/2022	11/16/2022	
Cloud Top Temperature	7/8/2022	11/16/2022	
Derived Motion Winds	7/8/2022	9/16/2022	
Derived Stability Indices	7/8/2022	11/16/2022	
Downward S/W Radiation: Surface	7/8/2022	11/16/2022	

L2+ Products	Beta	Prov	Full
Fire/Hot Spot Characterization	7/8/2022	11/16/2022	FY23
Ice Age & Thickness	7/8/2022	11/16/2022	
Ice Concentration & Extent	7/8/2022	11/16/2022	
Ice Motion	7/8/2022	11/16/2022	
Land Surface Albedo	7/8/2022	11/16/2022	
Land Surface Reflectance	7/8/2022	11/16/2022	
Land Surface Temperature	7/8/2022	11/16/2022	
Legacy Vertical Moisture Profile	7/8/2022	11/16/2022	
Legacy Vertical Temperature Profile	7/8/2022	11/16/2022	
Rainfall Rate/QPE	7/8/2022	11/16/2022	
Reflected S/W Radiation: TOA	7/8/2022	11/16/2022	
Sea Surface Temperature	7/8/2022	11/16/2022	
Snow Cover	7/8/2022	11/16/2022	
Total Precipitable Water	7/8/2022	11/16/2022	

Validation Maturity Levels:

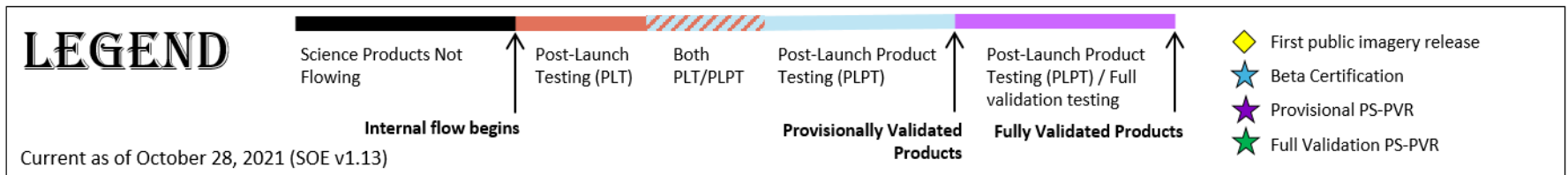
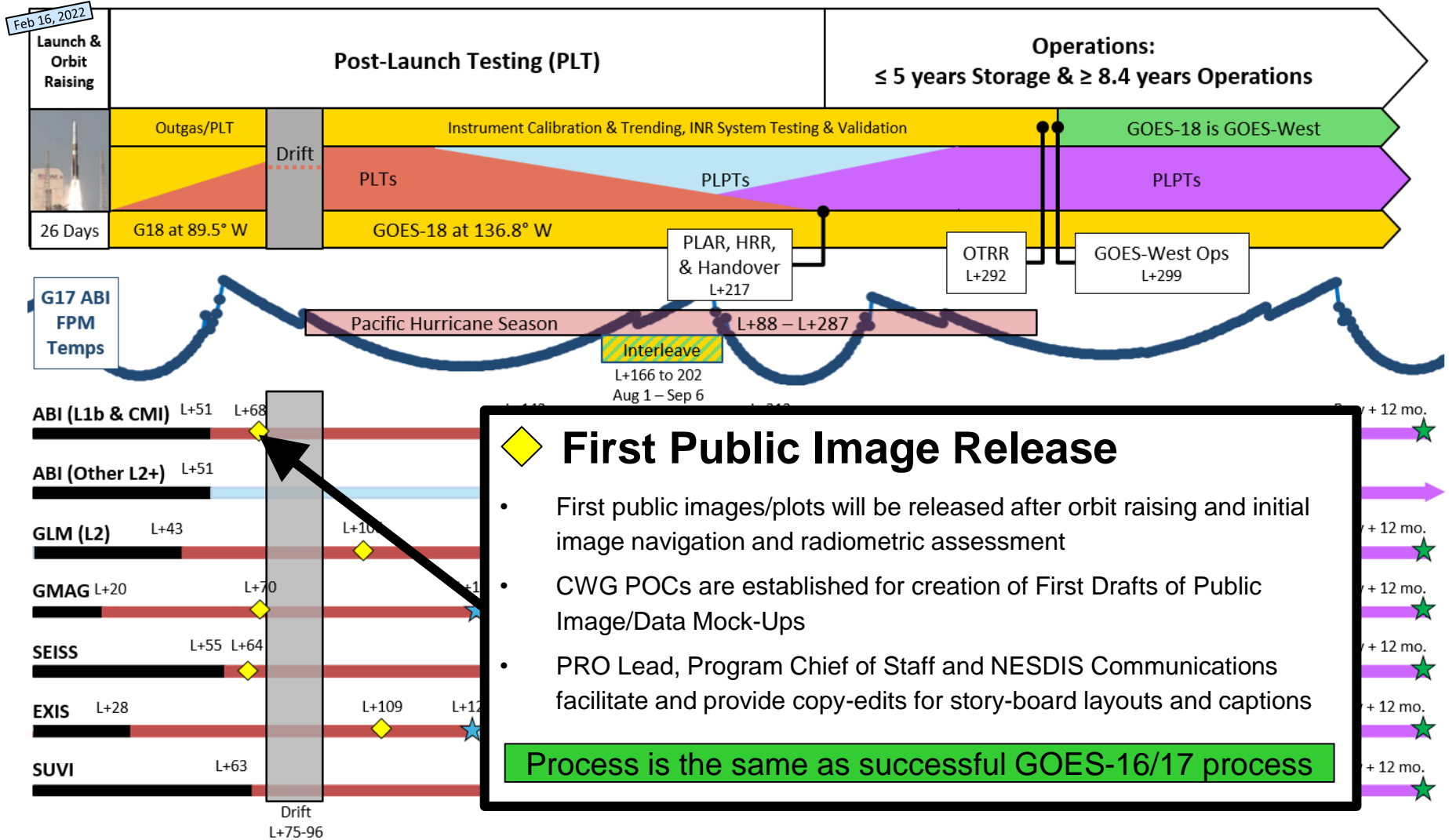
Not Validated

Beta Maturity

Provisional Maturity

Full Maturity

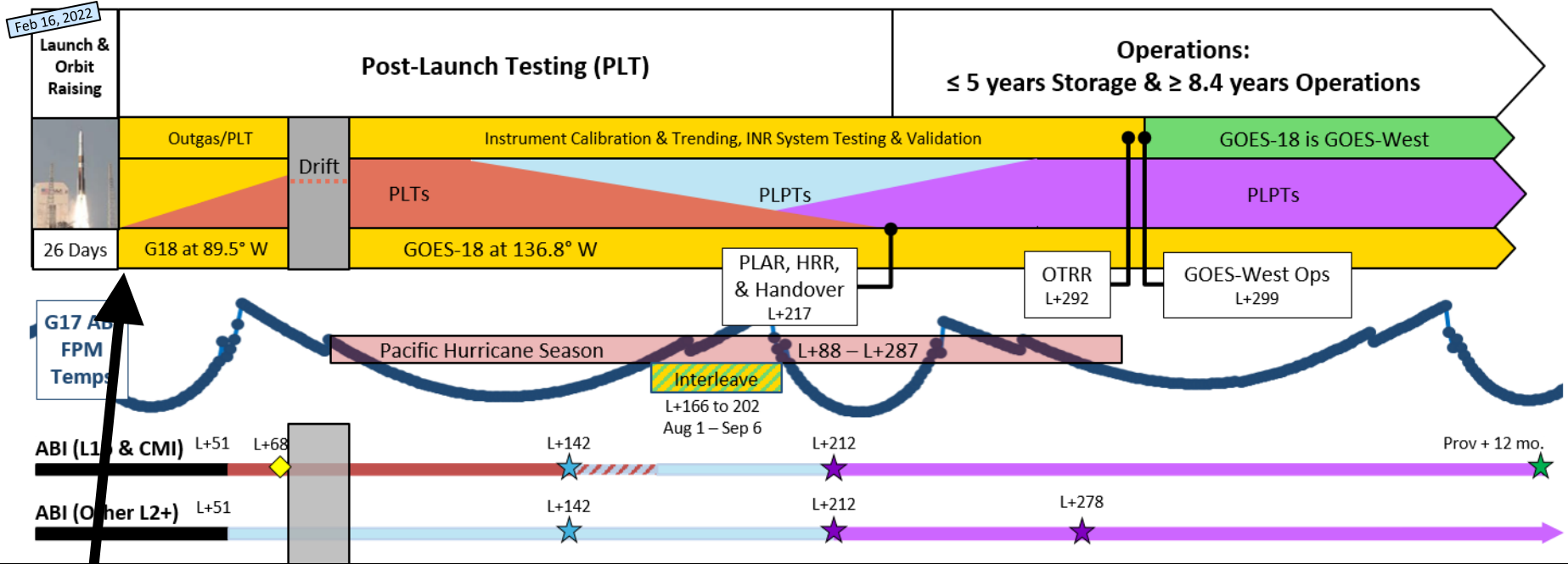
GOES-T Post-Launch Science Product Validation Schedule



October 29, 2021

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GOES-T Post-Launch Science Product Validation Schedule



Data Release Strategy: Internal Flow

- Commences upon completion of each instrument's outgassing
- Data will flow for path integrity test purposes to PDA and AWIPS
- Data will flow for instrument vendor and CWG Cal/Val purposes to LZSS
- Data will not be released from LZSS, PDA, AWIPS (SBN) to any downstream consumers other than instrument vendors, CWG, and CLASS. The Unique Payload Services (GRB, HRIT/EMWIN, DCS) will also not yet distribute data.

Process is the same as successful GOES-16/17 process

LEGEND

Science Products Not Flowing

Post-Launch Testing (PLT)

Both PLT/PLPT

Post-Launch Product Testing (PLPT)

Post-Launch Product Testing (PLPT) / Full validation testing

★ Beta Certification

★ Provisional PS-PVR

★ Full Validation PS-PVR

Internal flow begins

Provisionally Validated Products

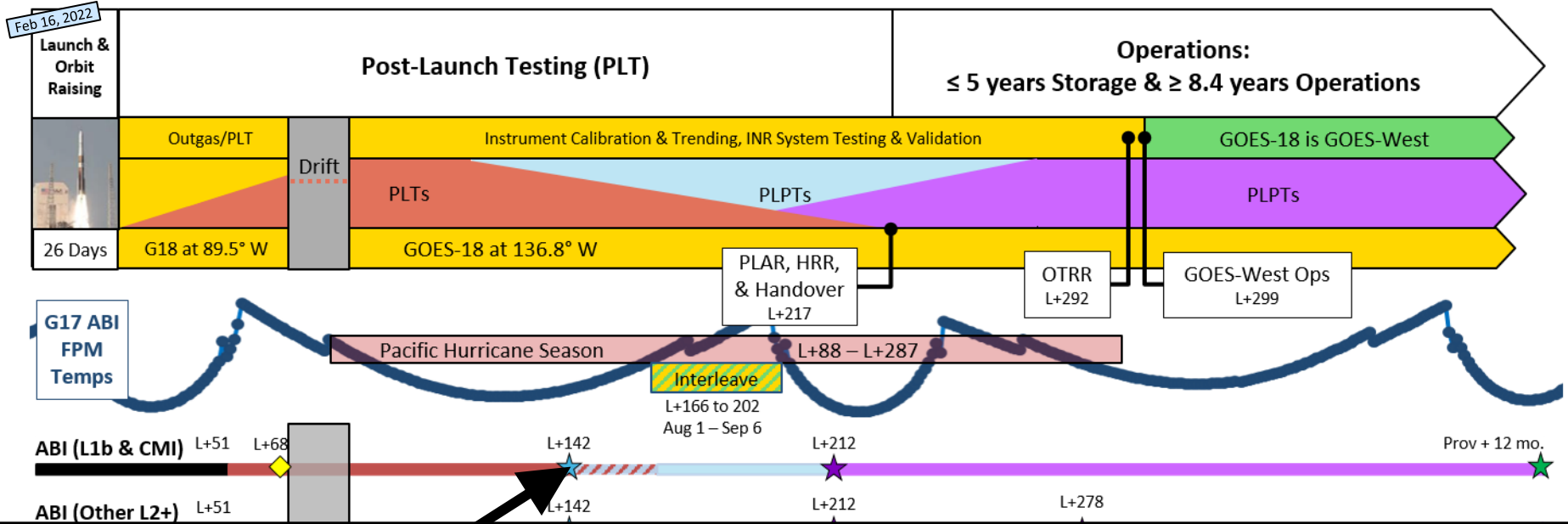
Fully Validated Products

Current as of October 28, 2021 (SOE v1.13)

October 29, 2021

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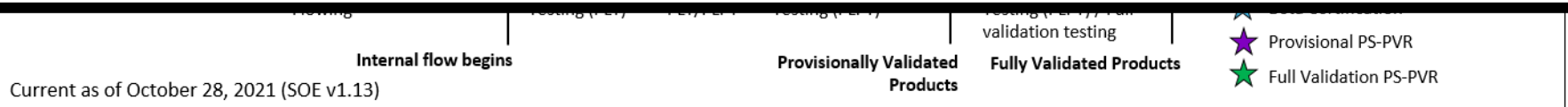
GOES-T Post-Launch Science Product Validation Schedule



Data Release Strategy: Beginning of External Flow

- Commences by product at Beta Maturity ★ which will not trigger GRB release like GOES-16/17
- LZSS, PDA, AWIPS (SBN) will flow data to their respective, integrated, downstream cal/val and I&T consumers
- PDA will not yet serve non-cal/val and non-I&T subscription holders
- Unique Payload Service Distribution [GRB, HRIT/EMWIN and GNC-A] will not yet distribute GOES-T
- Interleave starts when G17 ABI warm period begins + G18 ABI L1b & SCMI are Beta + G18 ABI is out of PLT test modes
 - GOES-17 GRB RF will omit GOES-17 ABI L1b and add GOES-18 ABI L1b

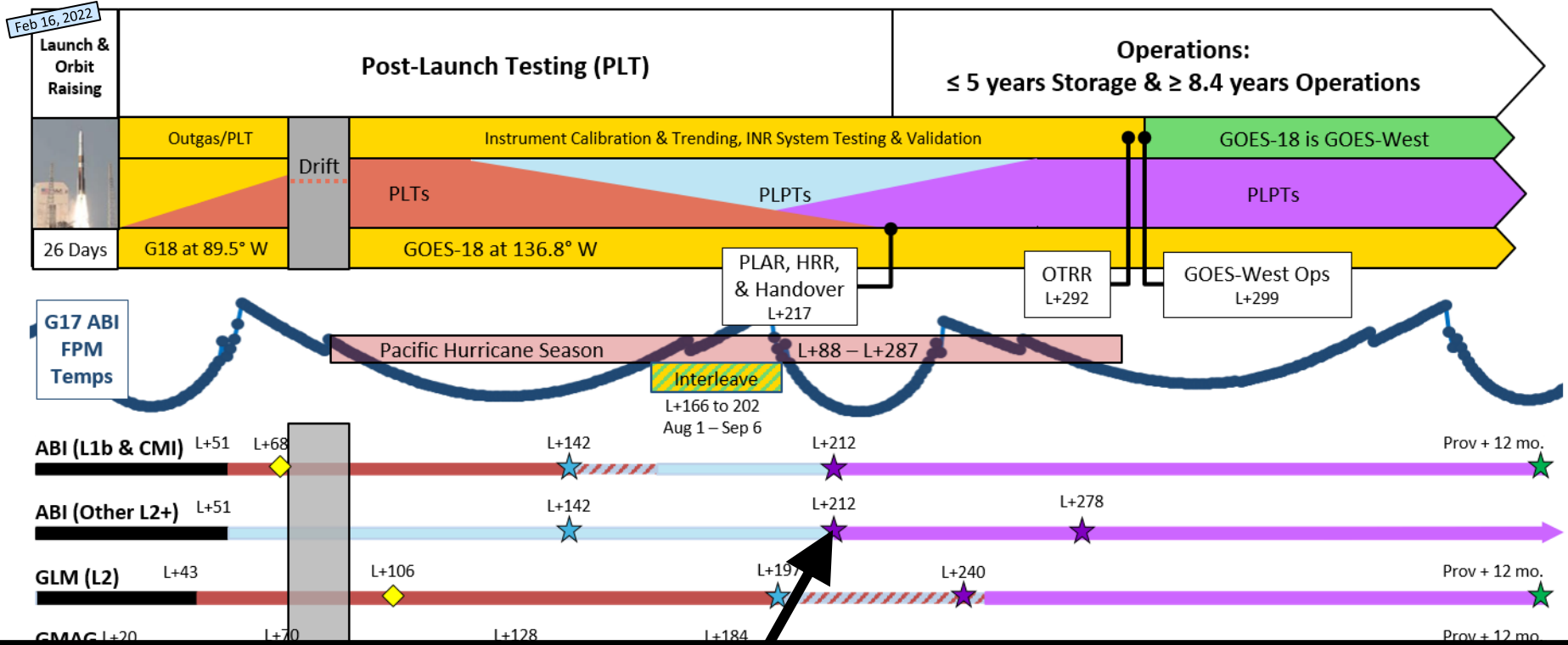
Process is similar to successful GOES-16/17 process.
Changes for GOES-T appear in blue.



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GOES-T Post-Launch Science Product Validation Schedule



Data Release Strategy: Completion of External Flow

- Commences by product at Provisional Maturity
- All subscriptions open to LZSS, PDA, AWIPS (SBN)
- Distribution on for Unique Payload Service Distribution [HRIT/EMWIN and GNC-A]. [GRB on at GOES-West declaration.](#)

Process is similar to successful GOES-16/17 process.
Changes for GOES-T appear in blue.

Internal flow begins

Provisionally Validated Products

Fully Validated Products

Validation testing

Provisional PS-PVR

Full Validation PS-PVR

Current as of October 28, 2021 (SOE v1.13)

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